WHAT IS CLAIMED IS:

1. A thermal type infrared detector comprising:

a substrate;

a temperature sensor of which electric characteristics are changed in accordance with temperature change caused by infrared absorption;

heat-insulating supporting legs for supporting said temperature sensor in a heat-insulating manner and serving as signal lines for reading out electric signals from said temperature sensor; and

an infrared absorption layer having thermal contact with said temperature sensor;

wherein each of said temperature sensor, said heat-insulating supporting legs and said infrared absorption layer is formed in different planes that are spatially apart from each other.

2. The thermal type infrared detector according to claim 1, wherein said temperature sensor and said infrared absorption layer are formed in a region that overlaps said heat-insulating supporting legs when seen from the direction of incident infrared rays.

3. The thermal type infrared detector according to claim 1, wherein said temperature sensor and said infrared

absorption layer are formed in a region that substantially covers the entire surface of said heat-insulating supporting legs when seen from the direction of incident infrared rays

4. The thermal type infrared detector according to claim 1, wherein said infrared absorption layer, said heat-insulating supporting legs and said temperature sensor are laminated sequentially when seen from the direction of incident infrared rays.

5. The thermal type infrared detector according to claim 1, wherein said temperature sensor comprises a diode or a plurality of diodes that are serially connected.

6. The thermal type infrared detector according to claim 1, wherein said temperature sensor comprises a transistor.

7. The thermal type infrared detector according to claim 1, wherein said substrate includes a mono-crystalline silicon layer formed on an insulating thin film and wherein said temperature sensor is formed in said mono-crystalline layer.

8. The thermal type infrared detector according to claim 1, wherein the portion of said substrate under said temperature sensor is removed.

9. The thermal type infrared detector according to claim 1, wherein said temperature sensor comprises a bolometer film.

10. A method for manufacturing a thermal type infrared detector comprising:

forming a temperature sensor on a substrate, the electric characteristics of said temperature sensor being changed in accordance with temperature change;

forming a first sacrifice layer that covers said temperature sensor and partially contacts with said substrate;

removing a portion of said first sacrifice layer to expose a portion of said temperature sensor;

forming a wiring layer on said first sacrifice layer so that said wiring layer electrically connects to said temperature sensor at a portion exposed from said first sacrifice layer;

forming a second sacrifice layer that covers said wiring layer and partially contacts with said first sacrifice layer;

forming via holes by removing a part of said first and second sacrifice layers;

forming an infrared absorbing layer on said second sacrifice layer so that said infrared absorbing layer contacts with said temperature sensor via said via holes either directly or interposing a insulating layer in between;

removing said second sacrifice layer, said first sacrifice layer and the portion of said substrate under said temperature sensor.

11. A method for manufacturing a thermal type infrared detector comprising:

forming a first sacrifice layer on a substrate;

forming a temperature sensor on said first sacrifice layer, the electric characteristics of said temperature sensor being changed in accordance with changes in temperature on a substrate;

forming a second sacrifice layer that covers said temperature sensor and partially contacts with said first sacrifice layer;

removing a portion of said second sacrifice layer to expose a portion of said temperature sensor;

forming a wiring layer on said second sacrifice layer so that said wiring layer electrically connects to said

temperature sensor at a portion exposed from said second sacrifice layer;

forming a third sacrifice layer that covers said wiring layer and partially contacts with said second sacrifice layer;

forming via holes by removing a part of said third and second sacrifice layers;

forming an infrared absorbing layer on said third sacrifice layer so that said infrared absorbing layer contacts with said temperature sensor via said via holes either directly or interposing a insulating layer in between;

removing said third sacrifice layer, said second sacrifice layer and said first sacrifice layer.

12. An infrared focal plane array comprising a plurality of thermal type infrared detectors according to claim 1, wherein said infrared detectors are arranged in a two-dimensional manner.

13. An infrared focal plane array comprising a plurality of thermal type infrared detectors according to claim 5, wherein said infrared detectors are arranged in a two-dimensional manner and applied a forward bias voltage to flow a constant current, and wherein the end-to-end

voltage generated by incident infrared rays in each of said infrared detectors are read out as an image signal.

14. The infrared focal plane array according to claim 13, further comprising a reference temperature sensor and differential input circuits to which both signals from said infrared detectors and said reference temperature sensor enter, wherein said reference temperature sensor has substantially the same temperature-voltage characteristic as those of said infrared detectors and is substantially non-sensitive to the incident infrared rays.